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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/928,565	08/13/2001	Elliot Karl Kolodner	GB920000101US1	7157

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IBM Corp.  
Intellectual Property Law  
Route 134 /Kitchawan Road  
Yorktown Heights, NY 10598

EXAMINER
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SHAH, NILESH R

ART UNIT	PAPER NUMBER
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2127

DATE MAILED: 02/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/928,565

**Applicant(s)**

KOLODNER ET AL.

**Examiner**

Nilesh Shah

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

1. Claims 1 –33 are presented for examination.

#### *Claim Rejections - 35 USC § 101*

2. 35 U.S.C. 101 reads as follows:
3. Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.
4. Claims 1-33 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. “A computer system including storage” is non-statutory for at least the reason that it is not tangibly embodied in a manner so as to be executable. Further, a collection of fields, *per se*, is not an actual data structure, instead being non-functional descriptive material. Thus rejections under §101 as being an **abstract idea**.

#### *Claim Rejections - 35 USC § 103*

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:
  - a. A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious

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at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolczko et al (5,900,001) (hereinafter Wolczko) in view of Aman et al (6,694,346) (hereinafter Aman).
7. As per claim 1, Wolczko teaches the invention substantially as claimed including a computer system providing an object-based virtual machine environment for running successive applications, said computer system including storage, at least a portion of which logically divided into two or more heaps in which objects can be stored(col. 2 lines 56-66; col. 5 lines 1-5), said system including:  
  
means for marking a card whenever an object in its corresponding storage region is updated (col. 5 lines 2-30).
8. Wolczko does not specifically teach the use of resetting heap at applications.  
  
Aman teaches means for detecting possible references from the second heap the first heap at reset by scanning the cards in the card table corresponding to the second heap, and detecting any cards which have been marked (col. 2 lines 53-65). It would have been obvious to one skilled in the art at the time of the invention to combine the teachings of Aman and Wolczko because Aman method of resetting memory heaps after applications would improve Wolczko's system by allowing each heap to be cleared of previous application memory thus improving the overall system.

9. As per claim 2, Wolczko teaches a computer system further comprising: means for locating, for each marked card, any objects the corresponding region of storage(col. 5 lines 2-10); and means for identifying any references to the first heap in the located objects (col. 6 lines 55-67).
10. As per claim 3, Wolczko teaches a computer system further comprising: means responsive to the identification of references the first heap for performing the mark phase(col. 5 lines 2-6) garbage collection to determine live objects in at least the second heap (col. 5 lines 41-50; col. 3 lines 40-67); means for detecting whether any objects in the second heap having references to the first heap have been marked as live(col. 5 lines 2-30); and Aman teaches means responsive to a detection of any such objects returning an error condition to prevent reset for another application (col.4 line 1-16).
11. As per claim 4, Aman teaches a computer system, further comprising means for invalidating the card table if a compact operation has been performed on the second heap since the last reset(col. 2 lines 53-65), wherein said means for performing the mark phase is also responsive to invalidation of the card table (col.4 line 1-16).

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12. As per claim 5, Wolczko teaches a computer system, wherein an object only considered as within the region of storage corresponding card if a predetermined part the object is in that region (col. 5 lines 2-30).
13. As per claim 6, Wolczko teaches a computer system wherein the region memory corresponding to a card comprises between 256 and 2048 bytes (col. 5 lines 25-30).
14. As per claim 7, Wolczko teaches a computer system further comprising:  
means for detecting references or possible references to the first heap from a set of predetermined locations(col. 5 lines 2-30).  
Amen teaches means responsive the detection of any such references or possible references for returning an error condition prevent reset for another application(col.4 line 1-16).
15. As per claim 8, Wolczko teaches a computer system wherein said set of predetermined locations includes the stacks and registers (col. 2 lines 3-11; col. 3 lines 50-55).
16. As per claim 9, Wolczko teaches a computer system further comprising: means for detecting any objects on the first heap which are reachable from virtual machine system class objects(col. 5 lines 2-20); and

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17. means for promoting any such detected objects to the second heap(col. 5 lines 10-30).

18. As per claim 10, Wolczko teaches a computer system including an object-based virtual machine environment for running successive applications, said computer system including storage, at least a portion of which is logically divided into two or more heaps in which objects can be stored (col. 2 lines 56-66; col. 5 lines 1-5), second heap persists from one application to the next, said system including:

means for identifying any objects on the first heap which have a finalization method (col. 5 lines 2-30).

Aman teaches a means for running the finalization methods of any identified objects on the main thread prior to reset of the first heap (col.4 line 1-16).

19. As per claim 11, Wolczko teaches a computer system further comprising means responsive to running said finalization methods for checking that they have not performed any operations which would prevent reset of the first heap (col. 2 lines 53-65).

20. Claims 12-22 are rejected based on the same rejections as claims 1-11 above.

21. Claims 23-33 are rejected based on the same rejections as claims 1-11 above.

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***Conclusion***


22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nilesh Shah whose telephone number is (571)272-3771. The examiner can normally be reached on 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng An can be reached on (571)272-3756. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Nilesh Shah  
Examiner  
Art Unit 2127

NS  
January 27, 2005

  
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